

# Inquiry Based Learning

Is Inquiry Based Learning more effective than direct teaching?

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# Statement of the Problem

Many schools have switched from a teacher-led classroom to an inquiry-based classroom. Inquiry based learning encourages students to become critical thinkers and accumulate knowledge through exploring and having open discussions with their peers. The problem with this is that some teachers are not properly trained to effectively incorporate inquiry based learning in their classrooms. Based on prior research, another problem with inquiry based learning is that younger grades require more assistance than inquiry based learning may recommend. Children may participate in open discussion but may learn false knowledge from other classmates if a teacher does not properly supervise group activities and discussions.

# Literature Review

## Theorist


Constructivist Theory: The term refers to the idea that learners construct knowledge for themselves. Each learner individually (and socially) constructs meaning as he or she learns. (Aldridge, 1994)

Piaget: Development occurs because the child is an active learner. Children actively organize new information with existing information to reach a state of **equilibrium**. (Mascolo, 1998)

Vygotsky: Children effectively perform difficult task with the help of a more advanced individual. Challenging task promote cognitive development. **Zone of Proximal Development** (Wass, 2014)


# Literature Review

## The Pros

- Students science literacy and research skills showed significant signs of improvement when using an inquiry based learning setting. Students gain more confidence when working in this setting. (Gormally, 2009)
  - IBL is beneficial to students with low critical thinking skills. In this study students showed a significant difference between pre-test and post-test when learning in an inquiry based learning setting. (Magnussen, 2000)
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# Literature Review

## The Cons

- **Confirmation Bias.** Minimal guidance is not effective because it relies heavily on prior knowledge. Children learn misconceptions or incomplete/disorganized knowledge. (Kirschner, 2006)
  - To engage and contribute in a meaningful way, students must already be motivated. They need a valid amount of previous knowledge. Resources are sometimes not available. (Edelson, 1999)
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# Literature Review

## The In Between

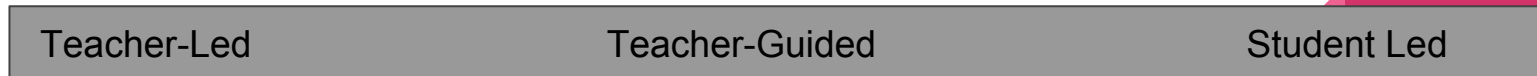
- Younger children need a prompt. When they begin to express their ideas the teacher has to be ready to expand on these ideas. Younger students will participate in open discussion but have trouble making scientific predictions and recognizing results. (Ergazaki, 2013)
  - There is no significant difference between inquiry based learning in upper grade versus lower grades. The issue is not the grade level but how much guidance is given to whom and when it is appropriate. (Lazonder, 2016)
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# Literature Review

## Contemporary Classroom Practices

In science classes today, important steps are used when learning in a inquiry based setting: collecting, exploring, explaining, and finally applying. These steps are used to aid students to think like real scientist. The teacher-led approach eliminates or shortens the exploring step.

When we learn something new we rely on prior knowledge to help us make sense of the situation. The teacher led classes eliminates the threat of students only relying on their personal views, which could be incorrect. Teacher-led sessions help direct students away from faulty assumptions. (Furtak, 2012)







# Research Hypotheses

H1: Fifth grade students in a inquiry based science class for one week will show a significant difference in test scores compared to Fifth grade students in a direct teaching setting at a Public School in Brooklyn, NY.

H2: First grade students in an inquiry based classroom for one week will not show a significant difference in test scores compared to first grade students in a direct teaching setting at a Public School in Brooklyn, NY.



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